
INFECTIOUS SALMON ANEMIA

EMERGENCY PROGRAMS UPDATE

Dr. Stephen K. Ellis
USDA APHIS VS
Sept. 18, 2003

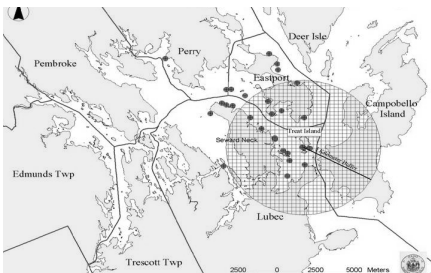
Q3M-0212.1.08b

ISA History

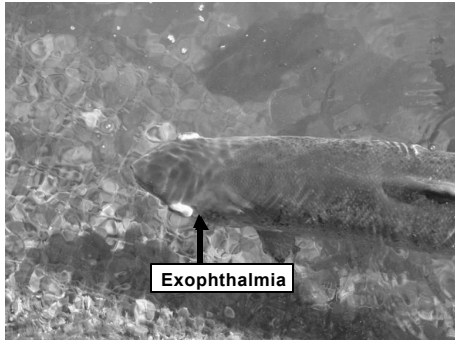
- ♦ Norway 1984
- ♦ New Brunswick, Canada 1996
- ♦ United Kingdom 1998
- ♦ Faroe Islands (Denmark) 1999
- ♦ Chile 1999
- ♦ Maine, USA 2001

Q3M-0212.2.08b

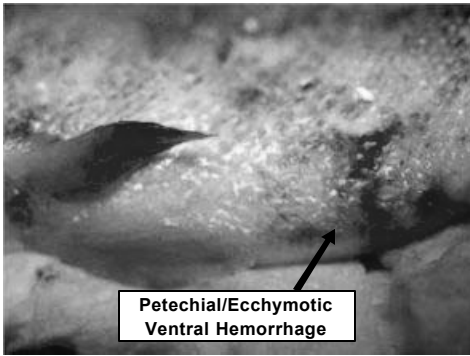
Maine ISAV High-Risk Zone



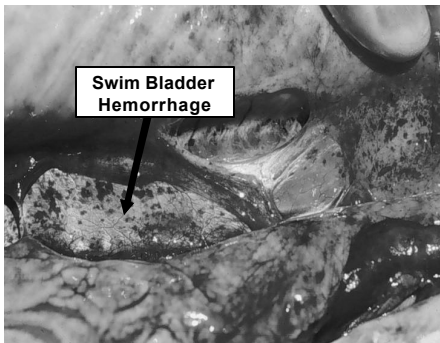
Q3M-0212.3.08b



Q3M-0212.4 08



Q3M-0212.5 08



Q3M-0212.6 08

Disease Description

- ♦ **ISAv is an RNA Orthomyxovirus**
- ♦ **Spread by**
 - Direct Contact
 - Fish Exudates
 - A Vector
 - Fomites
 - Reservoirs?
- ♦ **Incubation, Morbidity, Mortality**
All Variable

Q3M-0212.7.0b

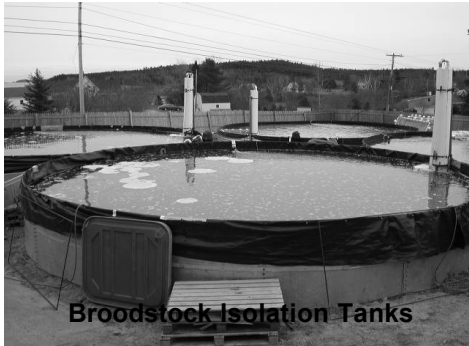


Q3M-0212.8.0b

ISA Detection Tests

- ♦ **USDA Approved Laboratory**
(Micro Technologies, Inc.)
- ♦ **rtPCR**
- ♦ **Virology**
- ♦ **IFAT**
- ♦ **Histopathology**
- ♦ **Gross Pathology**

Q3M-0212.9.0b



Broodstock Isolation Tanks

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Collecting Ova

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Collecting Milt

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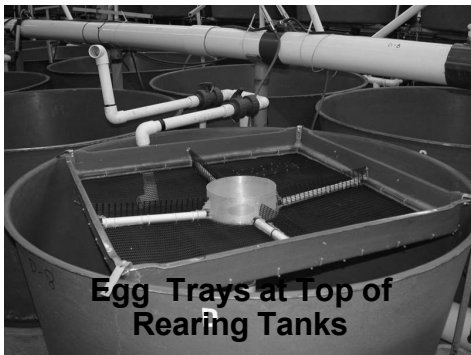
**Health Sampling of
Brood Stock**

Q3M-Q212-S-00a



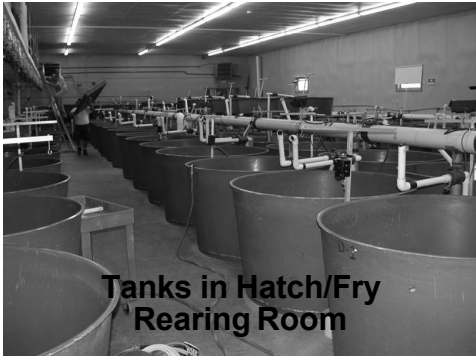
Fertilized Egg Disinfection

Q3M-Q212-W-00a



**Egg Trays at Top of
Rearing Tanks**

Q3M-Q212-S-00a



Tanks in Hatch/Fry Rearing Room

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Tending Parr in Outdoor Tanks

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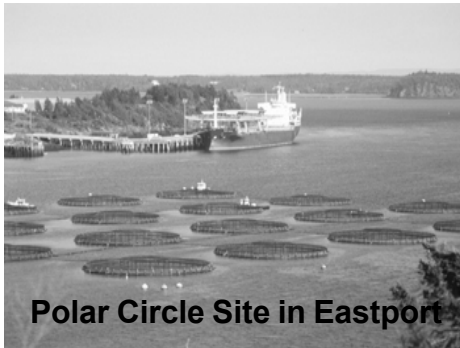
Smolt Transfer

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Steel Cage Site from Ferry

Q3M-Q212.2-01a



Polar Circle Site in Eastport

Q3M-Q212.2-01a



Seining Harvest Fish

Q3M-Q212.2-01a



**Seined Harvest Fish
Awaiting Brailing**

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**Brailing Harvest Fish
to Stun Tank**

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Salmon Processing Plant

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Automated Feed Barge

Q3M-0212.2P-00a



Land-Based Automatic Feeding System

Q3M-0212.2P-00a



Our Home-WCCC Marine Technology Center

Q3M-0212.2P-00a



Depopulation and Disposal

03M-0212-20-00a



Washing Nets

03M-0212-20-00a



Lifting Cage Out of the Water

03M-0212-20-00a



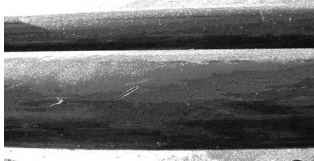
Cleaning a Polar Circle

03M-0212.3 80s

**Before
Cleaning
Plastic
Cage**



**After
Cleaning**



03M-0212.3 80s



**Steaming a Cleaned
Polar Circle**

03M-0212.3 80s



**Alternative Approach
for C&D**

Q3M-0212.3 8/04



**Measuring Surface
Temperatures
for Disinfection by Steam**

Q3M-0212.3 8/04



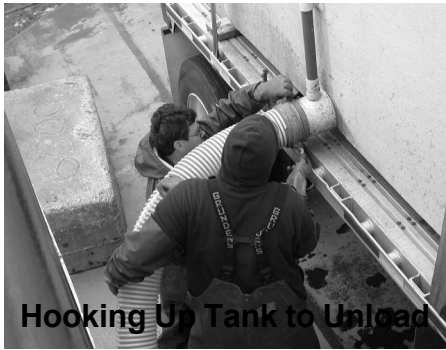
Backing onto the Ferry

Q3M-0212.3 8/04



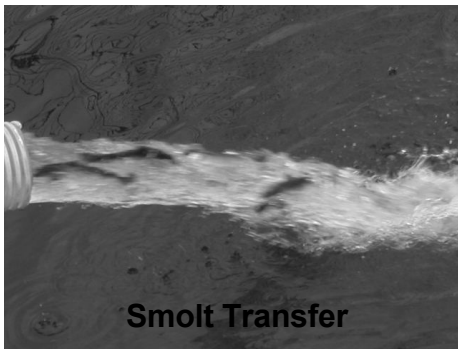
Preparing to Unload

ISM-0212.3 8/09



Hooking Up Tank to Unload

ISM-0212.3 8/09



Smolt Transfer

ISM-0212.3 8/09

ISA Control Program Components

- ◆ Biosecurity
- ◆ Surveillance
- ◆ Testing
- ◆ Disease Reporting
- ◆ Quarantine
- ◆ Depopulation
- ◆ Indemnity

ISM-0212-4-00a

Mortality Diving and Disinfection



Steaming cage

Iodophor Bath



ISM-0212-4-00a

Disinfection Stations



ISM-0212-4-00a



Surveillance Sampling

Q3M-0212-4-B09

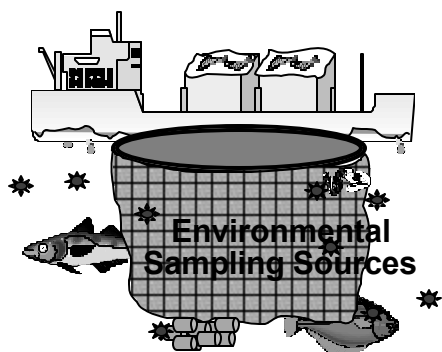


Environmental Monitoring



- Water
- Bivalves
- Boats
- Sediment
- Sea Lice
- Net/pontoons
- Salmon

Q3M-0212-4-B09



Environmental Sampling Sources

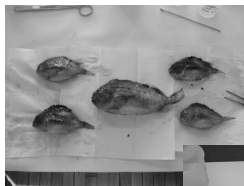
Q3M-0212-4-B09

Results Summaries: Seawater

- ◆ Only PCR + results
- ◆ Positives found up to 1.5 km from site
- ◆ Tide/current effects?
- ◆ Detection limits and interpretations



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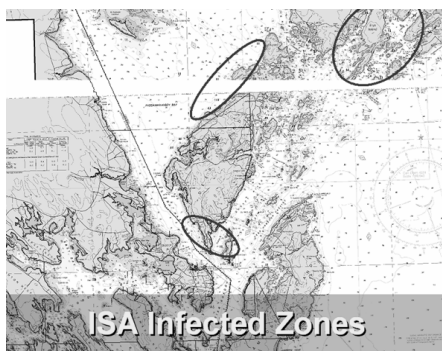


Lumpfish

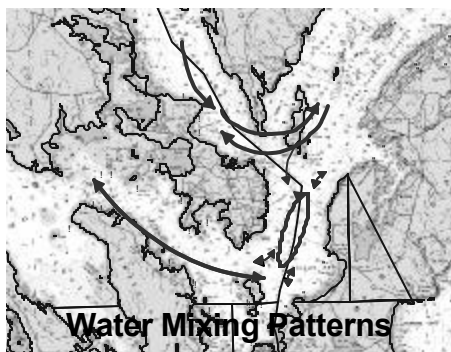


Cod

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